



Australian Government

MEM05040 Perform advanced geometric development - transitions

Release: 2

MEM05040 Perform advanced geometric development - transitions

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05040 Perform advanced geometric development – transitions (Release 1).

Release 1. Supersedes and is equivalent to MEM05040B Perform advanced geometric development – transitions.

Application

This unit of competency defines the skills and knowledge required to mark out complex and irregular shapes and reflects advanced skills required to calculate cutting, bending lines and developments.

Where the skills required are for marking out activities associated with general engineering and maintenance functions, one or more of the following units should also be selected as appropriate:

- MEM07005 Perform general machining
- MEM12006 Mark off/out (general engineering)
- MEM18006 Perform precision fitting of engineering components
- MEM18014 Manufacture press tools and gauges.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05037 Perform geometric development

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM12024 Perform computations

MEM12026 Perform advanced trade calculations in a manufacturing, engineering or related environment

MEM13015 Work safely and effectively in manufacturing and engineering

MEM14006 Plan work activities

MEM16006 Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- | | | |
|---|--|---|
| 1 | Determine job requirements | 1.1 Follow standard operating procedures (SOPs) |
| | | 1.2 Comply with work health and safety (WHS) requirements at all times |
| | | 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs |
| | | 1.4 Identify job requirements from specifications, drawings, job sheets or work instructions |
| | | |
| 2 | Mark off/out light/heavy gauge fabrications | 2.1 Determine and apply specifications and work requirements using appropriate calculations |
| | | 2.2 Carry out development to specifications or procedures using appropriate tools and equipment |
| | | 2.3 Establish and indicate datum points |
| | | 2.4 Determine and mark allowances |
| | | |
| 3 | Make templates as required | 3.1 Select appropriate template material to the marking out requirements |
| | | 3.2 Produce templates |
| | | 3.3 Determine and transfer allowances |
| | | 3.4 Produce templates to meet specifications |

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

		3.5	Follow correct storage procedures, including labelling and identification to procedures
4	Develop patterns as required	4.1	Select and apply parallel line, radial line and triangulation development methods, as appropriate, to the work requirements
		4.2	Determine and transfer allowances
5	Interpret relevant codes, standards and symbols	5.1	Interpret relevant standards/codes and symbols
		5.2	Interpret and apply requirements of standards/codes to materials and processes
6	Estimate quantities of materials from engineering drawings	6.1	Identify materials
		6.2	Estimate quantities from drawings
		6.3	Optimise material use and ensure wastage is minimised

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Light gauge fabrications include one (1) or more

- square/rectangular ventilation ducting
- air conditioning
- cylindrical components

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

of the following:

and include one (1) or more of the following:

- elliptical shapes
- curves
- spirals

Heavy gauge fabrications include one (1) or more of the following:

- ducting
- extraction
- piping
- cylindrical components

and include one (1) or more of the following:

- elliptical shapes
- curves
- spirals

Allowances include one (1) or more of the following:

- thickness
- bend
- pitch
- angle
- circumference
- perimeter
- contraction

Template materials include one (1) or more of the following:

- steel plate
- perspex
- timber

Templates produced include one (1) or more of the following:

- rolling
- bending
- pressing
- drilling
- profiling
- cutting

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Storage procedures
include one (1) or more
of the following:

- labelling
- identification (e.g. template lofts)

Development methods
include the following:

- parallel line
- radial line
- triangulation

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05040 Perform advanced geometric development - transitions

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- examining detailed drawings for fabrication requirements and specifications, including materials, quantities, measurements and tolerances, joining methods, standards and code requirements
- calculating and marking allowances for fabrication and assembly
- establishing and marking datum points
- selecting and using parallel line, radial line and triangulation development methods with minimum material wastage with accurate dimensions for fabrications
- producing templates and developing patterns accurately and following storage procedures.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- tools, equipment and techniques in template/patterns
- datum points
- geometrical principles and formulae
- parallel line, radial line and triangulation development methods as applied to transitions geometric development
- calculations of allowances, including manufacturers' allowances on materials
- fabrication and assembly allowances and effects of material type/thickness
- sources of data on fabrication/assembly allowances
- materials and procedures for making template/patterns
- template/patterns labelling, identification and storage
- relevant standards, codes and symbols
- fabrication materials

- optimising material use and minimising material wastage.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced geometric development – transitions at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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